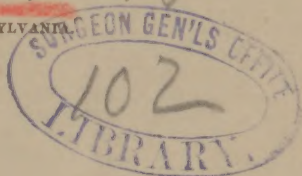


MAYS (T. J.)
With compliments of the author.

AN
IMPROVED METHOD
OF APPLYING
HEAT TO THE CHEST.

BY
THOMAS J. MAYS, M.D.,
UPPER LEHIGH, PENNSYLVANIA.



[REPRINTED FROM THE NEW YORK MEDICAL JOURNAL, OCTOBER, 1879.]

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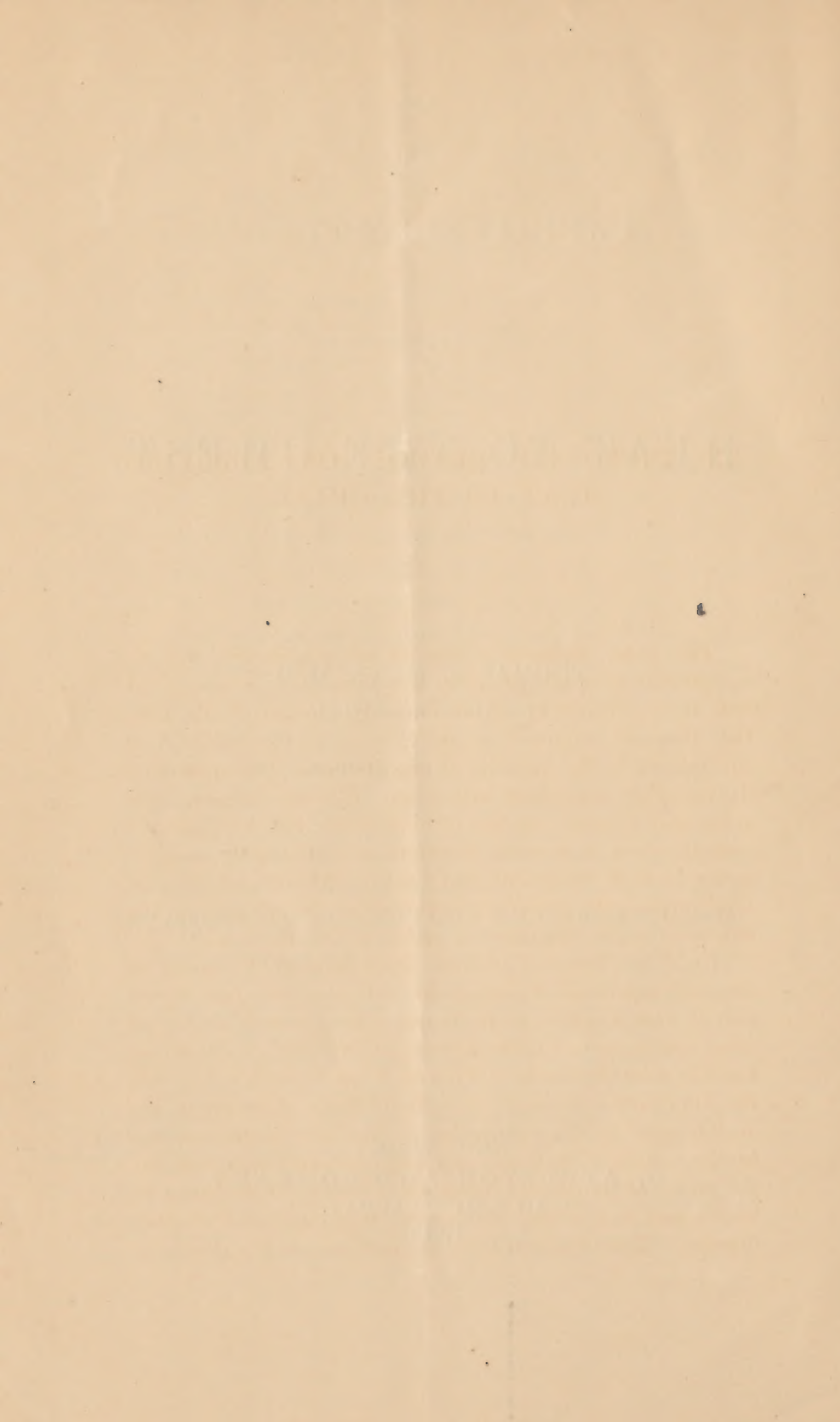
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AN IMPROVED METHOD OF APPLYING HEAT TO THE CHEST.

THE great therapeutic value of hot applications was demonstrated long ago, and they now form such an important link in the treatment of inflammatory diseases of the chest that they are employed in one form or another, or in their equivalents, by the majority of practitioners. The impending danger often associated with many of these diseases, both acute and chronic, renders it imperative that we possess a remedy which is at once powerful and sufficiently counter-active in their treatment, and I can confidently say that, for this purpose, the external application of heat is one of the most serviceable and effectual agents at our command.

I will not enter at present into a detailed discussion of the *modus operandi* of heat on the body; but for a full expression of what I believe to be its true action, as well as that of other agents applied to the exterior of the body, I would beg leave to refer the reader to Chapter V. of my little work "On the Therapeutic Forces." All that I deem necessary to say on this point in this connection is that heat *accelerates molecular motion* of the body, and when properly regulated has the power of translating this mode of activity from disease to health, and in this way stamps out inflammation and other diseases. That an agent like heat possesses such a power be-

comes evident when we examine the principle which obtains in the progression and recession of inflammation. For "if inflammation is in a quiescent state, i. e., neither extends nor diminishes its area, it is positive evidence that there exists an equilibrium between health and disease; and if, from any incidental cause, the normal activity of the surrounding part is depressed, the balance between these two states becomes disturbed, and the disease consequently spreads. So, precisely on the contrary, if the molecular activity of the surrounding part is from any cause enhanced, the balance is likewise destroyed, and health extends its territory. Now, in heat we possess a therapeutic agent" wherewith we are able to enhance molecular activity in the surroundings of inflammatory action, and thus force the battle-line into those parts which were formerly held by disease, and by the continuation of such a process of *stimulation* we are not only able to prevent the spread of the disease, but also to eradicate it.

The medium which is generally employed for the purpose of applying heat to the body consists of a poultice, which is composed of one or more of the following substances mixed with water: linseed-meal, slippery elm, oatmeal, corn-meal, bread, starch, bran, potatoes, etc.

Now, the chief and essential points of utility in a poultice are:

First: *A capacity to retain a moderately hot and constant temperature.* A poultice should be of a moderate temperature, not too hot to be comfortable to the patient, nor too cool to be of benefit to him. A poultice made of any of the above substances has the power of retaining a sufficient amount of heat at the time of its application, but its heat rapidly dissipates, even after it is properly protected by oiled silk, etc.; and in an hour or an hour and a half it becomes too cool to be of any further service. Now, if my idea of the vacillating nature of the border-land between health and disease and that of the *modus operandi* of these external stimulants be the true one, then it follows that the more persistent the stimulation is the more effective will it be—the sooner will the battle-line be forced into those parts which were formerly under the dominion of disease. But with the poultice

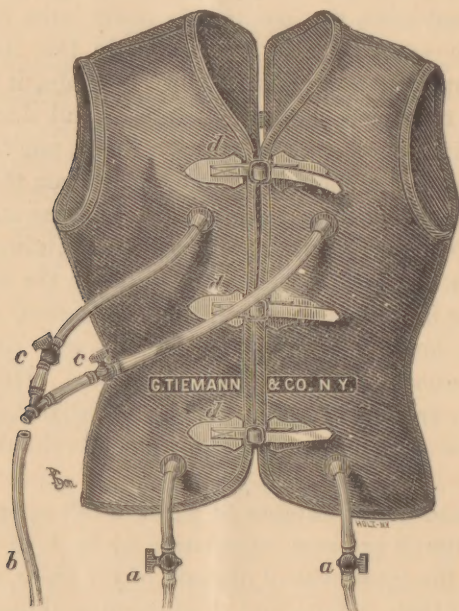
this is impracticable, for its stimulating power gradually diminishes until it reaches its minimum, when it must be exchanged for a hot one; and it is also obvious that during its replacement the process of stimulation is totally suspended, and consequently the reparative process is completely checked, which naturally weakens the forces on the side of health and allows those of disease to renew their strength and aggressiveness.

Second: *Sufficient extension to envelop not only the inflamed, but also the surrounding healthy parts.* This is readily secured when the poultice is made large enough, but as ordinarily made it also falls short in this requirement. As, for example, in many diseases of the lungs, it is very important that the apices should receive their full share of stimulation; yet it is very seldom that we find a poultice applied over the tops of the shoulders; and, even when this is undertaken, a great deal of time is exhausted in making and properly adjusting it, which of course entails a waste of its heat. Again, we have seen that it is necessary to stimulate the surrounding healthy parts in order to enhance their depressed, although as yet partially healthy, activity, and in this way compel their forces to encroach on the confines of disease. Hence, in any inflammatory trouble of the lungs, it is essential that the whole or at least the greater part of their surfaces should be enveloped.

Having had for a number of years a full appreciation of the great value of external stimulation by heat, in the form of poultices, in the treatment of diseases of the chest, as well as a knowledge of their defects and shortcomings, it seemed to me that an effort might be made to overcome these obstacles. Even that mode of "poulticing by steam" originated and devised by Dr. Horace Dobell, of London, England, as far back as 1874, does not, in my estimation, meet all the demands of a first-class poultice in inflammatory diseases of the chest. Here, in many instances, as I said before, it is of the utmost importance that the whole chest be invested, but his apparatus for the trunk of the body, also composed of rubber, simply consists of "a flat bag or cushion" which leaves a greater portion of the lateral and posterior surfaces of the lungs un-

protected, not to say anything of the exposed condition of the apices. Indeed, I can well understand how it is that the old-fashioned jacket linseed poultice is superior to such a mode of applying heat to inflammatory troubles in the chest, at least in many acute diseases.

Therefore, with the object of bringing to greater perfection this important auxiliary in the treatment of diseases of the lungs, I designed a rubber apparatus which is represented in the following cut, which has been manufactured by Messrs.



Tiemann & Co., of New York, to whom I am under many obligations for valuable suggestions received in regard to its construction.

The above figure represents the steam-jacket. *a*, stop-cocks and exhaust tubes; *b*, $\frac{3}{4}$ -inch caliber steam-tubing which conducts the steam from the boiler through feeding tubes *c, c*, to jacket; *d, d, d*, buckles and straps. The boiler is cylindrical, composed of tin, eight inches in diameter, six inches high, holds two gallons of water (two thirds of which quantity is

necessary only for steaming purposes), and fits the top opening of a range, cooking stove, or portable kerosene stove. Its top converges into a $\frac{3}{4}$ -inch tube, to which the rubber-tubing is attached.

It will at once be observed that this rubber steam-jacket strictly fulfills all the essential requirements of a strong and powerful, yet moderate external stimulant, and possesses the following prominent advantages over poultices and other appliances previously introduced to the profession: It envelops the whole chest completely. It is light and readily applied. It retains its position on the chest without difficulty. It is easily managed and operated. It is capable of maintaining a constant and uniform temperature. It requires no renewal; and patients, if strong enough, can sit up in a chair, or, if too weak, lie in bed while using it.

Before this jacket is applied, it is necessary, in order to protect the skin from any undue effects of heat, to envelop the whole chest with a vest composed of spongiopiline, or of several thicknesses of heavy flannel, which may be either wet or dry, according to the condition and indication of the patient.

From a limited experience in the use of this steam-jacket, I believe it to be a most valuable and important adjunct to the therapeutics of protracted and obstinate diseases of the lungs, such as interstitial pneumonia, chronic bronchitis, and even pulmonary consumption. Of its influence on the more acute inflammatory diseases of these organs, I am unable to say much from an experimental standpoint, not having had an opportunity of testing it thoroughly, but, judging from the efficacy of poultices and other similar applications in these diseases, I think it is reasonable to predict for it a like remedial effect.

HEALTH,

AND

HOW TO PROMOTE IT.

BY

RICHARD McSHERRY, M. D.,

PROFESSOR OF PRINCIPLES AND PRACTICE OF MEDICINE, UNIVERSITY OF MARYLAND; MEMBER OF
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